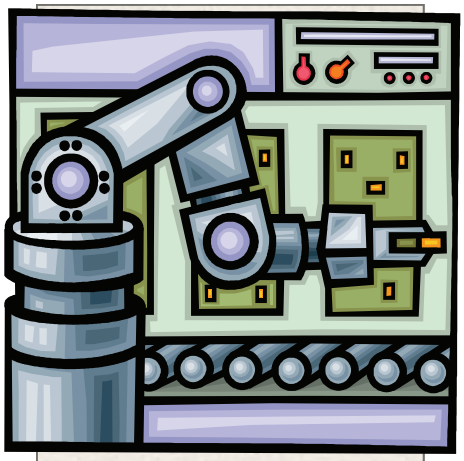
Direct Machining and Control

BRIGHAM YOUNG UNIVERSITY

CENTER

This Center is commercializing a disruptive technology for manufacturing: A new paradigm of one controller for many devices. That is, multiple machine tools can be run by one operator, through a network, rather than by individual operators. Instead of every machine having its own control panel, one program and one controller could theoretically manage all the machines within a plant—creating dramatic cost savings. A related application of the core technology (VMAC) is being developed for the home automation market.



TECHNOLOGY

The DMAC technology is based on the development of an open architecture controller and supporting control algorithms for general control of advanced mechanisms such as 5-axis machine tools. This controller uses a dual CPU PC/controller so that the CAD/CAM application can run under Windows, while the real-time control software can run under a second CPU. The motors and machine Input/Output (I/O) are commanded over a high speed network such as fiber optic and IEEE 1394 (firewire). The control software consists of object oriented libraries that integrate motion planning, trajectory generation, servo-control, communication, and user interfaces.

ACCOMPLISHMENTS

Technical progress has continued across numerous fronts, such as the development of a VMAC control architecture for variable frequency control of different devices; the Center now has four patents pending as well as multiple contracts from major industrial partners. Direct Controls, Inc., a spin-off company in Orem, Utah, has just released its first product, and industry visits to the Center are averaging one per week.

THINK TANK

What if there was...

A way to control, in real time, a high speed network of motors, sensors and other components with a software-based digital control system???

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